

## ABSTRACT OF THE DISCLOSURE

An integrated heater formed as a field effect transistor in a semiconductor substrate, with the transistor having source and drain regions with a channel region extending therebetween to conduct current. The channel region has a resistance when conducting current to generate heat above a selected threshold. A dielectric layer is disposed on the channel region and a gate electrode is disposed on the dielectric layer to control the current of the channel region. A thermally insulating barrier may be formed in the semiconductor material extending about the transistor. The object to be heated is positioned to receive the heat generated by the resistance of the channel region; the object may be a fluid chamber.

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